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REMARKS

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No amendments have been made to the application at this time.

Claims 1-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Slack et al references (U.S. Patent 5,955,609 or U.S. Patent 6,127,308) in view of the Scholl et al reference (U.S. Patent 5,124,370), and further in view of the Slack et al reference (U.S. Patents 5,663,272 or 6,887,399 or 6,991,746), or the Rostauser et al reference (U.S. Patent 5,783,652), or the Markusch et al reference (U.S. Patent 6,482,913).

The Slack et al references U.S. Patent 5,955,609 and U.S. Patent 6,127,308 disclose a trimer catalyst system for aliphatic and aromatic isocyanates. These two references are related and thus, have the same specification but different claims. More specifically, U.S. Patent 6,127,308 is a divisional of the application which matured into U.S. Patent 5,955,609. For convenience, Applicants' comments will be directed to U.S. Patent 5,955,609 unless otherwise noted.

U.S. Patent 5,955,609 discloses a trimer catalyst system that comprises (A) a compound selected from the group consisting of (i) lithium salts of aliphatic or aromatic monocarboxylic acids or dicarboxylic acids, (ii) lithium salts of hydroxyl group containing compounds which have from 1 to 3 hydroxyl groups per compound, in which the hydroxyl groups are attached directly to an aromatic ring, (iii) lithium hydroxide, and (iv) mixtures thereof; (B) at least one allophanate catalyst; and (C) at least one organic compound containing at least one hydroxyl group. This trimer catalyst system is broadly described as being suitable for the trimerization of both aliphatic isocyanates and aromatic isocyanates.

Polyisocyanate mixtures of the diphenylmethane series and a process for their preparation are disclosed by U.S. Patent 5,124,370 (the Scholl et al reference). These polyisocyanate mixtures contain isocyanurate groups. In particular, these liquid polyisocyanate mixtures which contain isocyanurate groups have a NCO group content of 15 to 30% by weight, and are obtained by partial trimerization of the isocyanate groups of polyisocyanate mixtures of the diphenylmethane series. Suitable polyisocyanate mixtures as described by the Scholl et al reference contain from 80 to 100% by weight of MDI isomers (i.e. monomeric MDI) and 0 to 20% by weight of polymeric MDI. The monomeric MDI or MDI isomers comprise from 40 to

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80% by weight of the 4,4'-isomer, from 20 to 60% by weight of the 2,4'-isomer and 0 to 8% by weight of the 2,2'-isomer, with the sum of the %'s by weight adding up to 100% by weight. See column 1, line 64 through column 2, line 9. In an optional embodiment, a hydroxyl-functional component may be present during the trimerization. A catalyst poison is added to terminate the trimerization reaction. (See column 2, lines 29-32.) This reference does not disclose polyisocyanate mixtures which contain allophanate groups.

Allophanate-modified diphenylmethane diisocyanates and a process for their production are disclosed in U.S. Patent 5,663,272. These allophanate-modified diisocyanates are described as being storage stable liquids at 25°C. These allophanate-modified MDIs are prepared by reacting a monoisocyanate with an organic compound having at least two hydroxyl groups and a molecular weight of from about 60 to about 6000, then reacting this product with a diphenylmethane diisocyanate having a specific isomer distribution, thereby forming the liquid allophanate-modified MDI which has an NCO group content of 12 to 30% by weight. See column 2, lines 50-59. The diphenylmethane diisocyanate contains from 0 to 60% by weight of the 2,4'-isomer of MDI, less than 6% by weight of the 2,2'-isomer of MDI, with the balance being the 4,4'-isomer. (See column 2, lines 59-63.) Thus, the 4,4' isomer content ranges from 40 to 100% by weight. These liquid allophanate-modified MDIs may be further reacted with an organic material which contains two or more hydroxyl or amino groups, a low MW diol, or a combination thereof, to form a prepolymer. (See column 2, line 64 through column 3, line 2.)

The other two Slack et al references (U.S. Patent 6,887,399 and U.S. Patent 6,991,746) belong to the same patent family. Thus, these two patents have the same disclosure but different claims. The '746 patent is a divisional of the '399 patent. For convenience, Applicants' will direct all their comments to the '399 patent unless otherwise noted.

Polymeric allophanates of diphenylmethane diisocyanate, prepolymers of these polymeric allophanates, and processes for the preparation of these products are described by the Slack et al reference ('399). These are higher functionality polymeric allophanate products prepared from an allophanate-modified diphenylmethane diisocyanate which comprises the reaction product of at least one

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OH group containing compound, and diphenylmethane diisocyanate which contains from 0 to 60% by weight of the 2,4'-isomer, less than 6% of the 2,2'-isomer and the balance (i.e. 34 to 100%) being the 4,4'-isomer. The allophanate modified MDI is held at a temperature of 20 to 70°C for a time ranging from 1 hour to 30 days to form the polymeric allophanate modified MDI, with a catalyst stopper being added after the polymeric allophanate modified MDI is formed.

Urethane prepolymers of allophanate-modified MDI having improved reactivity are disclosed by the Rosthauser et al reference (U.S. Patent 5,783,652). The reactivity was increased by the addition of an epoxide. The Rosthauser et al reference describes a mixture of A) 90 to 99.5% of a stable, liquid prepolymer of an allophanate-modified MDI, and B) 0.5 to 10% by weight of at least one epoxide having an epoxide equivalent weight of 44 to 400. The allophanate-modified MDI is prepared from an isomeric mixture of MDI comprising (i) 0 to 60% by wt. of the 2,4'-isomer, (ii) less than 6% by wt. of the 2,2'-isomer and (iii) the balance (i.e. 34 to 100%) being the 4,4'-isomer.

Finally, liquid MDI adducts which are freeze-stable are described in U.S. Patent 6,482,913 (the Markusch et al reference). These liquid isocyanate compositions comprise (A) an allophanate-modified MDI having an NCO group content of 16 to 30%, (B) a low molecular weight branched aliphatic dihydroxyl compound and (C) an epoxide functional compound. The allophanate-modified MDI (A) is the reaction product of (1) diphenylmethane diisocyanate in which the isomer distribution is 0 to 20% by weight of the 2,4'-isomer, 0 to 2% by weight is the 2,2'-isomer and the balance (i.e. 78 to 100% by weight) is the 4,4'-isomer, with (2) an aliphatic alcohol. See column 4, lines 3-10 and lines 22-28. These allophanate modified MDIs are further reacted with (B) a low MW branched aliphatic dihydroxy compound and (C) an epoxide. Thus, the freeze-stable compositions of the Markusch et al reference are actually prepolymers of allophanate-modified MDI. This reference does not disclose products which contain both allophanate groups and trimer groups.

It is respectfully submitted that this combination of references does not render the presently claimed invention obvious to one of ordinary skill in the art.

The Slack et al references (U.S. Patents 5,955,609 and 6,127,308) describe a
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suitable trimer catalyst system for aliphatic and aromatic isocyanates. This trimer catalyst system comprises (A) a compound selected from one of three specific groups of lithium compounds or lithium salts, (B) an allophanate catalyst, and (C) an organic compound which contains at least one hydroxyl group. Suitable diisocyanates disclosed by Slack et al reference include diphenylmethane diisocyanate (see column 7, lines 13, 24 and 33). The preferred embodiments of the Slack et al reference identify hexamethylene diisocyanate, diphenylmethane diisocyanate and toluene diisocyanate as preferred isocyanates.

The diphenylmethane diisocyanate used in the working examples (i.e. Examples 10, 14 and 15) of the Slack et al reference consisted of 98% by wt. of the 4,4'-isomer and 2% by wt. of the 2,4'-isomer (see column 7, lines 50-52). It is readily apparent that this particular MDI composition is clearly outside the scope of the presently claimed invention. The MDI composition of the present invention contains a minimum of 10% of the 2,4'-isomer of MDI and a maximum or 90% of the 4,4'-isomer of MDI. Accordingly, it is clear that the presently required MDI component and that of the Slack et al references (U.S. Patents 5,955,609 and 6,127,308) do not overlap.

The Scholl et al reference broadly discloses that liquid products which contain isocyanurate groups can be prepared from a polyisocyanate mixture which contains 80 to 100% by wt. of monomeric MDI and from 0 to 20% by wt. of polymeric MDI. Trimerization of isocyanate groups forms isocyanurate groups. This reference is silent with respect to the formation of allophanate groups.

It is further disclosed by the Scholl et al reference that the diphenylmethane diisocyanate isomers consists of 40 to 80% by weight of the 4,4'-isomer, 20 to 60% by weight of the 2,4'-isomer and 0 to 8% by weight of the 2,2'-isomer, with the sum of these totaling 100% by weight of the monomer. (See column 2, lines 18-27.) Obviously, when the isocyanate component of this reference contains 0% polymeric MDI, the above isomeric distribution for monomeric MDI is possible. When this isocyanate component contains 20% of polymeric MDI, there can "obviously" only be 80% of the monomeric MDI. Thus, the above described isomer distribution within this 80% of monomer results in actual amounts of the isomers as follows: from 32 to 64% of the 4,4'-isomer, from 16 to 48% of the 2,4'-isomer and from 0 to 6.4% of the 2,2'-isomer, when there is 20% of polymeric MDI present in the isocyanate component.

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These ranges are calculated by determining, for example with regard to the 4,4'-isomer, what 40% of 80 equals (i.e. 32%) and what 80% of 80 equals (i.e. 64%). Thus, the upper and lower ranges for each of the components in the isocyanate mixtures of the Scholl et al reference are: from 0 to 20% by wt. of polymeric MDI, from 32 to 80% by wt. of the 4,4'-isomer of MDI, from 16 to 60% by wt. of the 2,4'-isomer of MDI and from 0 to 8% by wt. of the 2,2'-isomer of MDI, with the sum totaling 100% by weight.

Three specific examples of different PMDI mixtures are set forth in the working examples of the Scholl et al reference. See column 4, line 65 through column 5, line 12. The first mixture (Isocyanate 1) comprises 56% of the 4,4'-isomer, 29% of the 2,4'-isomer, 5% of the 2,2'-isomer and 10% of polymeric MDI; the second mixture (Isocyanate 2) comprises 46-47% of the 4,4'-isomer, 52-53% of the 2,4'-isomer and less than 1% of the 2,2'-isomer; and the third mixture (Isocyanate 3) comprises 59% of the 4,4'-isomer, 23% of the 2,4'-isomer 3% of the 2,2'-isomer and 15% of polymeric MDI.

Applicants respectfully submit that none of these specific examples of PMDI mixtures fall within the scope of the presently required MDI composition a)(1). Obviously, neither the first and third MDI compositions of the Scholl et al reference satisfy the present requirements as these also contain 10% by wt. and 15% by wt. of polymeric MDI, respectively. It is evident from Applicants' claim language that the MDI compositions a)(1) of the present invention do not contain any polymeric MDI as the claim language requires that the sum of the 2,2'-isomer, the 2,4'-isomer and the 4,4'-isomer totals 100% by wt. of a)(1). In other words, the MDI compositions of a)(1) in the present invention are all monomeric MDI.

The only composition of the Scholl et al reference that is 100% monomeric MDI is the second one described at column 5, lines 1-6. This composition contains 46-47% of the 2,4'-isomer, 52 to 53% of the 4,4'-isomer and less than 1% by wt. of the 2,2'-isomer. By comparison, the presently claimed MDI compositions contain a maximum of 40% by wt. of the 2,4'-isomer and a minimum of 54% by wt. of the 4,4'-isomer. Therefore, the only 100% monomeric MDI composition described by the Scholl et al reference does not overlap with the scope of the monomeric MDI compositions required by Applicants claims. Thus, it is evident that substituting this

MDI composition for that of the Slack et al references also does not lead one skilled in the art to Applicants invention.

The Examiner's position appears to be that is "obvious" to one of ordinary skill in the art to combine the MDI mixtures of the Scholl et al reference with the process and catalyst system of the Slack et al reference (either the '609 reference or the '308 reference) to "arrive at" the presently claimed invention.

This combination does not result in the presently claimed invention. As discussed above, the present claim language requires an isomeric mixture of MDI which comprises (i) from 10 to 40% by wt. of the 2,4'-isomer, (ii) from 0 to 6% by wt. of the 2,2'-isomer and (iii) from 54 to 90% by wt. of the 4,4'-isomer, with the sum of these totaling 100% by wt. of the MDI. The Slack et al references disclose an isomeric mixture of MDI which comprises 98% by wt. of the 4,4'-isomer and 2% by wt. of the 2,4'-isomer (see column 7, lines 50-52 of the '609 patent). The only 100% monomeric MDI composition disclosed by the Scholl et al reference contains 46-47% of the 2,4'-isomer, from 52-53% of the 4,4'-isomer and less than 1% of the 2,2'-isomer. Thus, the monomeric MDI compositions of both the Slack et al references and the Scholl et al reference are outside the scope of that required by the present claims. Since the Slack et al references and the Scholl et al reference do not disclose an MDI composition that is within the scope of the present claims, combining these two references does **not** result in the presently claimed invention. This is true regardless of what else might be disclosed by these references. Accordingly, this combination of references does not render the presently claimed invention obvious.

The isocyanate mixtures of the Scholl et al reference are suitable for preparing partially trimerized isocyanates. Isocyanate mixture 2 of this reference, which is 100% monomer, is used to prepare a partially trimerized liquid diphenylmethane diisocyanate as described in Examples 7 and 8 in Table 1 at columns 5-6 of the Scholl et al reference. The product of Example 7 clearly does not contain allophanate groups as a hydroxyl group containing material is not present. This same MDI composition is used in Example 8. Although Example 8 of this reference contains a polyol component, this example is clearly characterized by the Scholl et al reference as forming urethane groups, not allophanate groups (see Table 1 at columns 5-6). See further discussion at column 3, lines 6-10 therein. Thus, the skilled artisan has

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no insight into the presently claimed invention upon reading the Slack et al references in combination with the Scholl et al reference.

At best, it is respectfully submitted this combination would lead the skilled artisan to substitute the MDI isomer mixture from Isocyanate mixture 2 of the Scholl et al reference into the process of the Slack et al references. This "substitution" yields the process for preparing a partially trimerized isocyanate of the Slack et al references in which the isocyanate component is Isocyanate mixture 2 from the Scholl et al reference. However, this is not the presently claimed invention. For reasons as set forth above, Isocyanate mixture 2 of the Scholl et al reference is outside the scope of the MDI mixture required by Applicants' invention. More specifically, the isomer distribution of the Scholl et al reference is not the same as that required by the present claims. Isocyanate mixture 2 of this reference contains from 46-47% of the 4,4'-isomer, from 52-53% of the 2,4'-isomer and less than 1% of the 2,2'-isomer. By comparison, the present invention requires a diphenylmethane diisocyanate component comprising from 10 to 40% by wt. of the 2,4'-isomer, from 0 to 6% by wt. of the 2,2'-isomer and from 54 to 90% by wt. of the 4,4'-isomer.

The substitution of the isocyanate described as Isocyanate mixture 2 of the Scholl et al reference for the MDI component described in the process of the Slack et al references would result in a product that contains isocyanurate groups, but no allophanate groups. Accordingly, this combination does not render the presently claimed invention obvious to one of ordinary skill in the art.

As previously discussed, Examples 18 and 19 of the present application illustrate that a partially trimerized stable liquid product can not be obtained from a starting MDI composition having a 2,4'-isomer content of less than 38%, and further that one could not predict that a starting MDI having from 10 to 40% by wt. of the 2,4'-isomer would make a stable liquid. (See paragraph 5 of the Office Action dated January 8, 2006, bridging pages 3-4 therein.) These examples are not allophanate-modified, partially trimerized diphenylmethane diisocyanates as required by the present claims. Rather, these two examples (i.e. Examples 18 and 19) result in partially trimerized MDI products. These products do not contain allophanate groups as an alcohol or other OH group containing compound is not present therein. Accordingly, allophanate groups are not present in Examples 18 and 19 of the

present application.

The MDI composition used to prepare the partially trimerized MDI product in Example 18 contained 100 pbw of MDI-1 and 100 pbw of MDI-2. Thus, this mixture contained about 72% of the 4,4'-isomer, about 27% of the 2,4'-isomer and about 1% of the 2,2'-isomer. It is evident that the isomer distribution of this MDI mixture falls within the scope of that required by Applicants' invention. In Example 18, however, the product was only partially trimerized, as no alcohol or other OH group containing compound was present. As disclosed on page 33, lines 5-12 of the present application, this partially trimerized product was turbid and contained about 15% solids.

The partially trimerized product in Example 19 was prepared from a MDI mixture of 60 pbw of MDI-1 and 140 pbw of MDI-2. Thus mixture contained a total of about 61.5% of the 4,4'-isomer, about 37.5% of the 2,4'-isomer and less than 1% of the 2,2'-isomer. This isomer distribution is also within the scope of that required by the present invention. Example 19 also did not contain an alcohol or other OH group containing compound so no allophanate groups were formed in the product. The partially trimerized MDI product formed in Example 19 was turbid with 10% solids (see page 33, lines 14-17 of the present application).

Thus, these two examples illustrate that stable liquid, partially trimerized products can not be prepared from all of the MDI compositions within the scope of Applicants claims. If one can not form stable liquid, partially trimerized products from the MDI compositions as illustrated by Examples 18 and 19, why would the skilled artisan expect to be able to form stable liquid, allophanate-modified, partially trimerized products from these same MDI compositions?

Other working examples of the present application illustrate that allophanate-modified, partially trimerized MDI products which are stable liquids can be formed from the presently required MDI compositions which have the specified isomer distribution. For example, Example 3 contains about 12% by weight of the 2,4'-isomer and about 88% by weight of the 4,4'-isomer. Thus, in Example 3 the isomer distribution is very close to the upper limit of the 4,4'-isomer and the lower limit of the 2,4'-isomer. Both Examples 5 and 10-17 contain about 37.5% of the 2,4'-isomer, about 1% of the 2,2'-isomer and about 61.5% of the 4,4'-isomer. Thus, these are very

close to the upper limit for the 2,4'-MDI and to the lower limit for the 4,4'-MDI. The isomer distribution of the blended product formed in Example 20 is similar to that of Examples 5 and 10-17. The remaining examples (i.e. Examples 1, 2, 4 and 6-9) have isomer distributions somewhere in-between these upper and lower limits. All of the products are allophanate-modified and partially trimerized since all of these examples also contain an alcohol compound. In addition, the products of these examples (i.e. Examples 1-17 and 20) are all clear liquid products (see page 30, lines 22-26, Table 1 on pages 31-32, and page 33, line 22 through page 34, line 10 of the present application).

It is respectfully submitted that this combination of references does not render the presently claimed invention obvious to one of ordinary skill in the art. Only after reading the present specification does it become "obvious" to prepare stable liquid products which are both allophanate-modified and partially trimerized from the presently required MDI compositions. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. § 103(a).

Some freeze-stable liquid TDI products which contain trimer groups are disclosed by the Slack et al references (U.S. 5,955,609 or U.S. 6,127,308). These references do not, however, disclose that stable liquid partially trimerized products of HDI or MDI were made. Thus, this leads one to conclude that freeze-stable liquid, partially trimerized HDI and/or MDI products were not made in the Slack et al references. Accordingly, the only information in the Slack et al references or the Scholl et al references about preparing liquid trimers based on MDI is that which is set forth in the Scholl et al reference.

As set forth above, the skilled artisan has no insight upon reading the Scholl et al reference into what isomer distribution is suitable for preparing the presently claimed stable liquid, allophanate-modified, partially trimerized diphenylmethane diisocyanate compositions. Also, Examples 18 and 19 of the present application illustrate that a stable liquid, trimer of MDI can not be prepared from an MDI composition which contains less than about 38% by weight of the 2,4'-isomer of MDI. Thus, the only stable liquid trimer products in the Scholl et al reference are those prepared from MDI having a 2,4'-isomer content greater than about 38%. The upper limit for the 2,4'-isomer content of the present application is 40%. Applicants therefore

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submit that the skilled artisan could not reasonably expect to be able to prepare stable liquid, allophanate-modified, partially trimerized MDI products from the presently required MDI composition a)(1).

It is further submitted that also combining the Slack et al references (U.S. 5,663,272, U.S. 6,991,746 or U.S. 6,887,399), the Rosthauser et al reference (U.S. 5,783,652) or the Markusch et al reference (U.S. 6,482,913) with the references discussed above does not render the presently claimed invention obvious to one of ordinary skill in the art.

The combination of U.S. 5,662,272 with either of the Slack et al references (U.S. 5,955,609 or U.S. 6,127,308) and the Scholl et al reference (U.S. 5,124,370) would lead the skilled artisan to first react a monolsocyanate (such as phenyl isocyanate) with an organic compound to form a urethane as in the '272 patent, and then react this urethane with MDI having an isomer distribution as described therein (i.e. 0 to 60% of the 2,4'-isomer, less than 6% of the 2,2'-isomer and the balance being the 4,4'-isomer) or as in the Scholl et al reference (U.S. 5,124,370), with the catalyst system of the '609 or the '308 patents. It is apparent that the resulting product would not contain both allophanate-groups and trimer groups as required by the present invention since no alcohol or other hydroxyl group containing compound would be included in the reaction. Thus, this combination does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

The Scholl et al reference only discloses one monomeric MDI component (Isocyanate mixture 2) and this monomeric MDI component is outside the scope of that which is required by the present claims. This monomeric MDI component of the Scholl et al reference comprises 46-47% of the 4,4'-isomer, 52-53% of the 2,4'-isomer and less than 1% of the 2,2'-isomer. Thus, forming the urethane as described by U.S. 5,662,272 and reacting this with the monomeric MDI from the Scholl et al reference and using the catalyst system(s) of the primary references (i.e. Slack et al, U.S. Patents 5,955,609 and/or 6,127,308) does not result in the presently claimed invention. Therefore, the presently claimed invention is not properly rejected as being obvious over this combination of references.

It is also submitted that combining U.S. 6,887,399 and/or U.S. 6,991,746, with U.S. Patents 5,955,609 and/or 6,127,308 (Slack et al references) and U.S. 5,124,370

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(Scholl et al) does not suggest the presently claimed invention to one of ordinary skill in the art. This combination of references would lead the skilled artisan to make a product from diphenylmethane diisocyanate using the specified isomer distribution in the '399 and the '746 patents. The MDI isomer distribution in these patents is broader than that required by the presently claimed invention. More specifically, both the '746 and the '399 patents describe stable liquid polymeric allophanates that can be prepared from MDI which contains from 0 to 60% by wt. of the 2,4'-isomer, less than 6% by wt. of the 2,2'-isomer and the balance being the 4,4'-isomer, with these %'s by wt. totaling 100% by wt. of the MDI. See column 2, lines 50-55 of the '746 patent.

This isomer distribution in the MDI component in the '746 and the '399 patents overlaps with the monomeric MDI component of Isocyanate Mixture 2 (see table at top of column 5) in the Scholl et al reference. One skilled in the art seeking to make a liquid allophanate-modified, partially trimerized MDI product would therefore expect that the 2,4'-isomer of MDI should be present in amounts greater than 50% and that the 4,4'-isomer should be present in amounts less than 50% since these portions of the ranges disclosed by Slack et al ('746 and '399) overlap with those of the Scholl et al reference. However, this is not the presently claimed invention.

One skilled in the art has no insight into the MDI isomer distribution required to prepare the presently claimed stable liquid allophanate-modified, partially trimerized diphenylmethane diisocyanates from the Slack et al references ('609 and/or '308) combined with the Scholl et al reference and the Slack et al references ('746 and/or '399). The present application contains several examples (Examples 18 and 19) which demonstrate that partially trimerized MDI products are not stable liquids when using the presently required isomer distribution. (A detailed discussion of these examples is set forth above.) Applicants respectfully submit that the skilled artisan has no reasonable basis to assume that stable liquid products which contain both allophanate-groups and trimer groups can be formed from the presently required MDI component. Therefore, combining the Slack et al references (the '746 and/or the '399 patents) with the primary references (Slack et al; the '609 and the '308 patents) and the secondary reference (Scholl et al) does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

The ranges of 2,4'-isomer and 4,4'-isomer which are disclosed as being suitable in the '746 and the '399 patents are overly broad as compared to those that actually work and/or are claimed in the present invention. Thus, the '746 and the '399 patents do not provide any insight to one skilled in the art into the presently required isomer distribution of the MDI component.

It is respectfully submitted that only after reading the present specification does the presently required MDI isomer distribution become "obvious" to one of ordinary skill in the art. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. § 103(a). Accordingly, this combination of references simply does not suggest the presently claimed invention to one skilled in the art.

Applicants further submit that combining the Rosthauser et al reference (U.S. Patent 6,887,399) with the primary references (the Slack et al patents; '609 and '308) and the secondary reference (the Scholl et al reference) does not properly suggest the presently claimed invention to one of ordinary skill in the art. The isomer distribution required by the Rosthauser et al reference is the same as that required by the Slack et al references (U.S. Patents 6,887,399 and 6,991,746) discussed above. See column 2, lines 47-53 of the '652 patent. Thus, the Rosthauser et al adds nothing more to the rejection in terms of what isomer distribution of the MDI component would be considered by one of ordinary skill in the art. Accordingly, for the reasons set forth above, combining the Rosthauser et al reference with the other references does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

The addition of epoxides to urethane prepolymers of the allophanate-modified diphenylmethane diisocyanates is disclosed by Rosthauser et al reference. These are added to improve the reactivity (i.e. the epoxide increases the reactivity profile of the prepolymers with isocyanate-reactive components). See column 2, lines 6-10. However, this reference further discloses that an allophanate-modified MDI treated with an epoxide also exhibits increased reactivity with isocyanate-reactive components, but it is not storage stable in terms of NCO content and viscosity at temperatures of 25 to 50°C. Thus, it is unclear why the Examiner would rely on the Rosthauser et al reference in making this rejection.

The combination of the Rosthauser et al reference with the Slack et al references (the '609 and the '308 patents) and the Scholl et al reference appears to

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suggest making urethane prepolymers from allophanate-modified MDIs and trimerized products as in the Slack et al and the Scholl et al references, followed treating these with epoxides, or treating the allophanate-modified and trimerized products with epoxides. These are not Applicants' invention. Also, as discussed above with regard to the Slack et al '746 patent and the Slack et al '399 patent, the skilled artisan would select a MDI component having an isomer distribution that is outside the scope of that required by the present invention as he would expect the range of 2,4'-isomer and 4,4'-isomer that overlap with the Scholl et al reference to be useful. This isomer distribution of the Scholl et al reference is outside the scope of that required by the present invention. Accordingly, it is respectfully submitted that combining the Slack et al references (the '609 and the '308 patents) with the Scholl et al reference and the Rosthauser et al reference does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

In addition, selectively combining only the isomer distribution from the Rosthauser et al reference with the trimer catalyst of the Scholl et al reference and the catalyst system of the Slack et al references ('609 and/or '308) does not result in the presently claimed invention. As discussed above with respect to the Slack et al references (U.S. Patent 6,887,399) and U.S. Patent 6,991,746), the disclosed isomer distribution is overly broad for forming stable liquid products which contain both allophanate-groups and trimer groups in accordance with the present claims. It is unclear at best, what effect (if any) the epoxide of the Rosthauser et al reference would have on a product that contains both allophanate groups and trimer groups. Therefore it is submitted that the inclusion of the Rosthauser et al reference does not provide one skilled in the art any additional insight into the presently claimed invention. It is readily apparent that the Examiner is selectively "picking and choosing" from the broad disclosures of these references to "arrive at" the present invention.

Finally, combining the Markusch et al reference (U.S. Patent 6,482,913) with the Slack et al references (U.S. 5,955,609 or U.S. 6,127,308) and the Scholl et al reference (U.S. 5,124,370) also does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

The present invention is specific to stable liquid, allophanate-modified, partially trimerized diphenylmethane diisocyanate. By comparison, the Markusch et al

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reference is related to liquid polyisocyanate compositions which comprise an allophanate-modified MDI, a low molecular weight aliphatic dihydroxyl compound and an epoxide functional compound. Thus, the liquid polyisocyanates are prepolymers of allophanate-modified MDI which contain epoxide and have improved freeze stability. The combination of the Markusch et al reference with the Slack et al references (U.S. 5,955,609 or U.S. 6,127,308) and the Scholl et al reference (U.S. 5,124,370) does not result in presently claimed invention. One skilled in the art upon reading this combination of references would add an epoxide to urethane prepolymers of allophanate-modified MDI.

The Markusch et al reference discloses a MDI isomer distribution containing 0 to 20% by wt. of the 2,4'-isomer, from 0 to 2% by wt. of the 2,2'-isomer and the balance being 4,4'-isomer, with the sum of these totaling 100% by wt. of MDI (see column 4, lines 6-9 and lines 55-58). This MDI component is reacted with an aliphatic alcohol to form allophanate-modified MDI. Although this isomer distribution overlaps with that of the present invention, it is not identical to that required by Applicants' invention. The present invention requires from 10 to 40% of the 2,4'-isomer, less than 6% of the 2,2'-isomer and the balance is 4,4'-MDI (see Claim 1). What information would lead the skilled artisan to alter the disclosed MDI isomer distribution to that required by the present invention? Applicants submit that the present isomer distribution only becomes evident to the skilled artisan after reading Applicants specification. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. § 103(a).

Furthermore, the Markusch et al reference specifically describes the addition of the epoxides to prepolymers of allophanate-modified MDI. Thus, this combination would suggest that a prepolymer of an allophanate-modified MDI or of a partially trimerized MDI must be treated with an epoxide. This is not the present invention. Although prepolymers are the subject of withdrawn claims (see Claims 39-44) in the present application, these claims are not currently being prosecuted.

This combination of references leads the skilled artisan to prepare prepolymers as in the Markusch et al reference, which contain an epoxide, with either the MDI isomer distribution therein or that of the Scholl et al reference, and either the trimer catalyst of the Scholl et al reference or the catalyst system of the Slack et al

references (U.S. 5,955,609 or U.S. 6,127,308). These combinations are not the present invention.

Even if the skilled artisan only relies on the Markusch et al reference for the MDI isomer distribution, the combination of this isomer distribution with the catalyst system of the Slack et al references ('609 or '308) and/or that of the Scholl et al reference, does not result in the presently claimed invention. As previously discussed the isomer distribution of the Markusch et al reference does not clearly correspond to that of the present invention. Therefore the resultant products would not necessarily be stable liquids as required by the present invention. Nor would these products necessarily contain both allophanate-groups and trimer groups. Applicants respectfully submit that this combination of references does not fairly suggest the presently claimed invention.

The isomer distribution of the Markusch et al reference only suggests a different range of isomers to "try". Thus, it appears that the Examiner is applying an "obvious to try" standard of patentability. This is not the proper standard of under 35 U.S.C. § 103(a).

In view of the above remarks, Applicants respectfully submit that the presently claimed invention is not properly rejected as being obvious under 35 U.S.C. 103(a) over the Slack et al references (U.S. 5,955,609 or U.S. 6,127,308) in view of the Scholl et al reference (U.S. 5,124,370), and further in view of the Slack et al references (U.S. Patent 5,663,272, U.S. Patent 6,887,399 and U.S. Patent 6,991,746), the Rostauser et al reference (U.S. Patent 5,783,652), and/or the Markusch et al reference (U.S. Patent 6,482,913). Only after reading the present specification does the presently claimed invention become "obvious" to one of ordinary skill in the art. Such a perspective does not provide a proper basis for a rejection of the present claims under 35 U.S.C. 103(a).

With regard to the Examiner's position that the broad teachings of the Scholl et al reference are within the claimed range, including the specific examples that employ p-MDI and that the instant claims do not exclude p-MDI, Applicants respectfully disagree.

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Polymeric MDI is clearly not required by the presently claimed invention. Even though polymeric MDI is "possible" due to Applicants use of "comprising" language, it is readily apparent that the total amount of monomeric MDI decreases as the quantity of polymeric MDI increases and that the isomer distribution between the 2,2'-, 2,4'- and 4,4'-isomers change. The presence of polymeric MDI would also result in the amount of each isomer decreasing. Thus, one can not properly and/or directly compare a polymeric MDI composition with a 100% monomeric MDI composition. The best comparison is either between two polymeric MDI compositions or between two 100% monomeric MDI compositions.

The Examiner further stated that Applicants arguments concerning percent composition are "based solely on the diisocyanate component and cannot be construed to exclude components that are not diphenylmethane diisocyanate, such as p-MDI". See final Office Action dated July 16, 2007, sentence bridging pages 3-4 therein. It is respectfully submitted that the express claim language of Claim 1 states that the percents by weight of the 2,2'-, 2,4'- and 4,4'-isomers totals 100% of the diphenylmethane diisocyanate. Therefore, this language does exclude polymeric MDI from component a)(1).

Finally, the Examiner stated that "applicant's arguments are based heavily upon an improper interpretation of the claims" and that "no meaningful weight can be given to applicant's arguments that fail to address relevant teachings of Scholl et al". See 1st paragraph on page 4 of the final Office Action dated July 16, 2007. Applicants respectfully disagree.

It is Applicants position that their interpretation of the claims is correct and accurately reflects what one of ordinary skill in the art would understand and interpret the claims to mean. It is respectfully submitted that Applicants have attempted to address all relevant teachings of the Scholl et al reference. If the sole basis of the Examiner's position is that "no meaningful weight can be given to applicant's arguments" is because Applicants have a different interpretation and/or position than the Examiner, this position is improper. Applicants have interpreted both the claims of the present application and the disclosure of the Scholl et al reference (as well as all other references cited) as one of ordinary skill in the art would. Therefore, meaningful weight should be given to their arguments.

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Applicants therefore submit that each of these rejections are improper and request that these be withdrawn. It is respectfully requested that the present application be reconsidered in view of the preceding remarks. The allowance of Claims 1-18 is respectfully requested.

Respectfully Submitted,

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